

I CLAIM:

1. A method for generating a mosaic image from a video sequence, the method comprising the steps of:

receiving a video sequence, comprising a sequence of pictures, as a coded data stream respectively comprising at least picture information and motion information relating to the video sequence;

selecting a motion model from a number of predetermined motion models which model motion-related differences between the sequence of pictures using motion information rather than picture information from the coded data stream; and

10 determining, for at least a subset of respective pictures in the sequence, a first estimate of a set of registration parameters relating to the selected motion model, such that the set of registration parameters for at least a subset of the respective pictures can be used to construct a mosaic image from the pictures.

15

2. The method as claimed in claim 1, further comprising the step of determining, for each respective pair of pictures of at least a subset of the pictures, a set of provisional picture-pair registration parameters, using a subset of the motion information of the coded data stream.

20

3. The method as claimed in claim 2, further comprising the step of determining, for each respective pair of pictures of at least a subset of the pictures, at least one further set of provisional picture-pair registration parameters, using different subsets of the motion information of the coded data stream.

5

4. The method as claimed in claim 3, further comprising the step of selecting from the sets of provisional picture-pair registration parameters, for each respective pair of pictures of at least a subset of the pictures, a set of provisional picture-pair registration parameters that is most consistent with at least a subset of the motion information associated with that pair of pictures.

5. The method as claimed in claim 4, further comprising the step of identifying motion information that is not consistent with the selected set of provisional picture-pair registration parameters, so the identified inconsistent motion information can be ignored from further consideration in the step of determining the first estimate of the set of registration parameters.

15
20

6. The method as claimed in claim 5, further comprising the step of determining sets of picture-pair registration parameters that relate to registration of the respective pairs of pictures, for each respective pair of pictures for at least a subset of the picture pairs, based upon a selected subset of the motion information.

5

7. The method as claimed in claim 6, further comprising the step of calculating, for each picture of at least a subset of the pictures, a first estimate of a set of registration parameters, which relates the respective picture to a mosaic coordinate system, based upon the sets of picture-pair registration parameters that relate to at least the respective picture.

8. The method as claimed in claim 5, further comprising the step of selectively decoding selected parts of the coded data stream corresponding with portions of pictures, for use in determining a refined estimate of the picture-pair registration parameters.

15
20

9. The method as claimed in claim 8, further comprising the step of determining, for each respective pair of pictures for at least a subset of the picture pairs, a refined estimate of a set of picture-pair registration parameters of selected picture pairs, using at least (i) the corresponding first estimate of the set of registration parameters and (ii) the decoded picture information from selected portions of at least the corresponding pictures.

10 The method as claimed in claim 7, further comprising the step of determining, for at least a subset of the pictures, a consistent set of registration parameters of selected picture pairs, by minimizing a measure of registration inconsistencies between at least a subset of the picture-pair registration parameters and the first estimate of a set of registration parameters of a least a subset of the pictures.

15

11. The method as claimed in claim 1, further comprising the step of using an intensity-matching procedure to reduce mismatches in intensity between the pictures when constructing the mosaic image.

20

12. The method as claimed in claim 11, wherein the step of using an intensity-matching procedure uses only the motion information and selected intensity components of the picture information.

5

13. The method as claimed in claim 1, further comprising the step of constructing a mosaic image from the pictures of the video sequence, using respective sets of registration parameters relating to at least a subset of pictures in the sequence.

10

14. The method as claimed in claim 13, wherein the mosaic is constructed using the first estimate of registration parameters.

15

15. The method as claimed in claim 13, wherein the mosaic is constructed using the refined estimate of registration parameters.

16. The method as claimed in claim 12, wherein the mosaic is constructed using the consistent estimate of registration parameters.

20

17. The method as claimed in claim 12, wherein the mosaic is constructed using the results of an intensity correction procedure to reduce mismatches in intensity between the pictures of the sequence.

5

18. The method as claimed in claim 1, wherein the motion information is presented in the form of motion vectors relating a block of pixels in one picture to a block of pixels in a second picture of the video sequence.

10

19. The method as claimed in claim 1, wherein the coded video sequence is coded in a manner compatible with an MPEG standard.

15

20. Computer software, recorded on a medium, for generating a mosaic image from a video sequence, the computer software comprising:

software code means for receiving a video sequence, comprising a sequence of pictures, as a coded data stream respectively comprising at least picture information and motion information relating to the video sequence;

software code means for selecting a motion model from a number of predetermined motion models that model motion-related differences between the sequence of pictures, using motion information rather than picture information from the coded data stream; and

10 software code means for determining, for at least a subset of respective pictures in the sequence, a first estimate of a set of registration parameters relating to the selected motion model, such that the set of registration parameters for at least a subset of the respective pictures can be used to construct a mosaic image from the pictures.

21. A computer system for generating a mosaic image from a video sequence, comprising:

means for receiving a video sequence, comprising a sequence of pictures, as a coded data stream respectively comprising at least picture information and motion

5 information relating to the video sequence;

means for selecting a motion model from a number of predetermined motion models that model motion-related differences between the sequence of pictures, using motion information rather than picture information from the coded data stream; and

means for determining, for at least a subset of respective pictures in the

10 sequence, a first estimate of a set of registration parameters relating to the selected motion model, such that the set of registration parameters for at least a subset of the respective pictures can be used to construct a mosaic image from the pictures.